CLAIMS

What is claimed is:

1. A method of forming an active device comprising acts of:

depositing a dielectric layer on a substrate;

placing a polymer composite over at least a portion of the dielectric layer to form drain and source contacts, the polymer composite having a conducting filler; and

forming an organic semiconductor layer over at least a portion of the polymer composite, the organic semiconductor layer providing a channel between the drain and source contacts.

2. The method of claim 1, wherein the act of forming an organic semiconductor layer further comprises acts of:

dissolving an organic semiconductor in a solvent forming a semiconductor solution;

depositing the semiconductor solution over at least a portion of the polymer composite; and

evaporating the solvent from the semiconductor solution such that the organic semiconductor layer remains.

3. An active device produced by the process of Claim 1.

4. A method of forming a flexible contact comprising acts of:

forming a first contact pattern on a supporting structure;

depositing a dielectric layer on the supporting structure;

depositing a polymer composite having a conducting filler to form a second contact pattern connected with the dielectric layer; and

providing an organic semiconductor layer for connecting a first portion of the second contact pattern with a second portion of the second contact pattern.

5. The method of Claim 4, wherein the act depositing a dielectric layer includes an act of selecting a dielectric material from a group consisting of: silicon dioxide, silicon nitride, aluminum oxide, tantalum oxide, hafnium oxide, polyimide, and polyvinylphenol.

6. The method of Claim 4, wherein the depositing a polymer composite is preformed by a printing technique selected from: stencil printing, and inkjet printing.

7. The method of Claim 4, wherein the act of depositing a polymer composite is preformed with the conducting filler selected from a group consisting of: graphite, silver, carbon, conducting derivatives of carbon, and gold.

8. The method of Claim 4, wherein the act of providing an organic semiconductor layer further comprise acts of:

dissolving an organic semiconductor in a solvent forming a semiconductor solution;

depositing the semiconductor solution over at least a portion of the polymer composite; and

evaporating the solvent of the semiconductor solution such that the organic semiconductor layer remains.

9. The method of Claim 8, wherein the act of dissolving is preformed with a solvent selected from a group consisting of: toluene, xylenes, aromatic solvents, and aliphatic solvents.

10. The method of Claim 4, wherein the act of depositing a polymer composite is preformed in an atmosphere.

11. The method of Claim 4, wherein the acts of depositing a polymer composite and providing an organic semiconductor layer are preformed in an order selected from a group consisting of: first depositing the polymer composite, then providing the organic

semiconductor layer, and first providing the organic semiconductor layer, then depositing the polymer composite.

12. A flexible contact produced by the process of Claim 4.

13. A flexible ohmic contact comprising:

a supporting structure including a first contact pattern;

a dielectric layer disposed on the supporting structure;

a polymer composite connected with the dielectric layer, the polymer composite providing a second contact pattern, the second contact pattern having a first portion and a second portion, where the first portion and the second portion are separated by a distance; and

an organic semiconductor layer connected with the dielectric layer, the organic semiconductor layer allowing for an electrical connection between the first portion and the second portion of the second contact pattern.

14. The flexible ohmic contact of Claim 13, wherein the supporting structure is a flexible substrate.

15. The flexible ohmic contact of Claim 13, wherein the dielectric layer is selected from the group consisting of: silicon dioxide, silicon nitride, aluminum oxide, tantalum oxide, hafnium oxide, polyimide, and polyvinylphenol.

16. The flexible ohmic contact of Claim 13, wherein the polymer composite is a polymer thick-film ink having a conducting filler.

17. The flexible ohmic contact of Claim 16, wherein the conducting filler is selected from the group consisting of: graphite, silver, carbon, conducting derivatives of carbon and gold.

18. The flexible ohmic contact of Claim 13, wherein the polymer composite is disposed with respect to the dielectric layer by stencil printing or inkjet printing.

19. The flexible ohmic contact of Claim 13, wherein the organic semiconductor layer is connected with the dielectric layer by placing the organic semiconductor layer on a portion of the dielectric layer in solution form, wherein a portion of the solution is evaporated leaving the organic semiconductor layer.

20. The flexible ohmic contact of Claim 13, wherein at least a portion of a thickness of the organic semiconductor layer lies between the polymer composite and the dielectric layer.